IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Previously Presented) A recording apparatus for recording data to a record medium, comprising:

video encoding means for encoding video data in a group structure of a plurality of frames by performing a compression-encoding process;

video data output means for outputting encoded video data by said video encoding means;

audio data output means for outputting compression-encoded or non-compressed audio data;

management data generating means for generating management data which manages said encoded video data and said audio data;

transforming means for transforming the data structure of encoded video data that is output from said video data output means, audio data that is output from said audio data output means, and the management data into a file structure; and

recording means for recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output means, a first audio data unit which corresponds to a predetermined number of sound samples of

said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure , and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

2. (Previously Presented) A recording apparatus for recording video data to a rewritable optical disc, comprising:

video encoding means for encoding video data in a group structure of a plurality of frames by performing a compression-encoding process;

video data output means for outputting encoded video data by said video encoding means;

audio data output means for outputting compression-encoded or non-compressed audio data;

management data generating means for generating management data which manages said encoded video data and said audio data;

transforming means for transforming the data structure of encoded video data that is output from said video data output means, audio data that is output from said audio output means, and the management data into a file structure; and

recording means for recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output means, a first audio data unit which corresponds to a predetermined number of sound samples of said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

3. (Original) The recording apparatus as set forth in claim 1,

wherein the compression-encoding process is MPEG,

wherein the group structure is GOP structure, and

wherein data of which a sequence header is added to each GOP is matched with the first data unit.

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Previously Presented) The recording apparatus as set forth in claim 1, wherein the duration of the encoded video data of the second video data unit is the same as the duration of the encoded audio data of the second audio data unit in the transformed data.

8. (Previously Presented) The recording apparatus as set forth in claim 1, wherein the encoded video data of the second video data unit and the encoded audio data of the second audio data unit are alternately placed in the file structure, each of the encoded video data of the second video data unit and the encoded audio data of the second audio data unit being matched with a successive record length on the record medium.

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Previously Presented) A recording method for recording data to a record medium, comprising the steps of:

encoding video data in a group structure of a plurality of frames by performing a compression-encoding process;

outputting encoded video data by said encoding step;

outputting compression-encoded or non-compressed audio data;

generating management data which manages said encoded video data and said audio data;

transforming the data structure of encoded video data that is output from said video data output step, audio data that is output from said audio output step, and the management data into a file structure; and

recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output step, a first audio data unit which corresponds to a predetermined number of sound samples of said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit respectively.

13. (Previously Presented) A recording method for recording video data to a rewritable optical disc, comprising the steps of:

encoding video data in a group structure of a plurality of frames by performing a compression-encoding process;

outputting encoded video data by said encoding step;

outputting compression encoded or non-compressed audio data;

generating management data which manages said encoded video data and said audio data;

transforming the data structure of encoded video data that is output from said video data output step, audio data that is output from said audio output step, and the management data into a file structure; and

recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output step, a first audio data unit which corresponds to a predetermined number of sound samples of said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

14. (Canceled)

15. (Previously Presented) A recording method for recording video data and audio data to a record medium, comprising the steps of:

encoding video data and audio data in a group structure of a plurality of frames by performing a compression-encoding process;

outputting encoded video data by said encoding step;

outputting compression-encoded or non-compressed audio data;

generating management data which manages said encoded video data and said audio data;

transforming the data structure of encoded video data that is output from said video data output step, audio data that is output from said audio output step, and the management data into a file structure; and

recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output step, a first audio data unit which corresponds to a predetermined number of sound samples of

said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

16. (Canceled)

17. (Currently Amended) A ~~record~~ computer readable medium ~~on which a program for recording data to a record medium has been recorded, the~~ embodying a program causing a computer to perform the steps of:

encoding video data in a group structure of a plurality of frames by performing a compression-encoding process;

outputting encoded video data by said encoding step;

outputting compression encoded or non-compressed audio data;

generating management data which manages said encoded video data and said audio data;

transforming the data structure of encoded video data that is output from said video data output step, audio data that is output from said audio output step, and the management data into a file structure; and

recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output step, a first audio data unit which corresponds to a predetermined number of sound samples of said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

18. (Currently Amended) A ~~record~~ computer readable medium ~~on which a program for recording video data to a rewritable optical disc has been recorded, the~~ embodying a program causing a computer to perform the steps of:

encoding video data in a group structure of a plurality of frames by performing a compression-encoding process;

outputting encoded video data by said encoding step;

outputting compression encoded or non-compressed audio data;

generating management data which manages said encoded video data and said audio data;

transforming the data structure of encoded video data that is output from said video data output step, audio data that is output from said audio output step, and the management data into a file structure; and

recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output step, a first audio data unit which corresponds to a predetermined number of sound samples of said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

19. (Currently Amended) A ~~record~~ computer readable medium ~~on which a program for recording audio data to a rewritable optical disc has been recorded, the~~ embodying a program causing a computer to perform the steps of:

encoding video data and audio data in a group structure of a plurality of frames by performing a compression-encoding process;

outputting encoded video data by said encoding step;

outputting compression encoded or non-compressed audio data;

generating management data which manages said encoded video data and said audio data;

transforming the data structure of encoded video data that is output from said video data output step, audio data that is output from said audio output step, and the management data into a file structure; and

recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output step, a first audio data unit which corresponds to a predetermined number of sound samples of said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

20. (Currently Amended) A ~~record~~ computer readable medium ~~on which a program for recording video data and audio data to a record medium has been recorded, the~~ embodying a program causing a computer to perform the steps of:

encoding video data and audio data in a group structure of a plurality of frames by performing a compression-encoding process;

outputting encoded video data by said encoding step;

outputting compression encoded or non-compressed audio data;

generating management data which manages said encoded video data and said audio data;

transforming the data structure of encoded video data that is output from said video data output step, audio data that is output from said audio output step, and the management data into a file structure; and

recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output step, a first audio data unit which corresponds to a predetermined number of sound samples of

said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.

21. (Canceled)

22. (Previously Presented) The recording apparatus as set forth in claim 1,

wherein said first video data unit and said first audio data unit correspond to the encoding unit which can be decoded respectively.

23. (Previously Presented) The recording apparatus as set forth in claim 1,

wherein said transforming means transforms the data structure of said encoded video data and said audio data into said file structure which contains said first video unit, said first audio data unit, said second video data unit, said second audio data unit, and a resource data which includes at least the size of said first video data unit and said fist audio data unit; and

said recording means records said resource data to said record medium.

24. (Previously Presented) The recording apparatus as set forth in claim 1

wherein said recording means records said transformed encoded video data and said audio data to said record medium so that said second video data unit and said second audio data unit are recorded on a successive record length of said record medium respectively.

25. (Previously Presented) The recording apparatus of claim 1,

wherein said recording means records said transformed encoded video data and said audio data to said record medium so that said second video unit and said second audio unit are placed in such a manner that said second video data unit is adjacent to said second audio data unit corresponding thereto.

26. (Canceled)

27. (Canceled)

28. (Previously Presented) The recording apparatus according to claim 1,

wherein the video track data contains information representing a relationship between the first video data unit and a time base and the audio track data contains information representing a relationship between the first audio data unit and a time base.

29. (New) A recording apparatus for recording data to a record medium, comprising:

a video encoder for encoding video data in a group structure of a plurality of frames by performing a compression-encoding process;

a video output for outputting encoded video data by said video encoder;

an audio output for outputting compression-encoded or non-compressed audio data;

a data generator for generating management data which manages said encoded video data and said audio data;

a transformer for transforming the data structure of encoded video data that is output from said video output, audio data that is output from said audio output, and the management data into a file structure; and

a recorder for recording said transformed encoded video data, the audio data, and the management data to a record medium,

wherein the file structure contains a first video data unit which corresponds to a predetermined number of frames of said encoded video data outputted from said video output, a first audio data unit which corresponds to a predetermined number of sound samples of said audio data, a second video data unit which comprises a plurality of said first video data units, and a second audio data unit which comprises a plurality of said first audio data units,

wherein said second video data unit and said second audio data unit are recorded on a successive location of said record medium respectively; and

wherein said management data includes video track data and audio track data of independent data structure, and

wherein the video track data contains a size quantity of the first video data unit and a start position of the second video data unit and the audio track data contains a size quantity of said first audio data unit and a start position of said second audio data unit, respectively.